Small Business Innovation Research/Small Business Tech Transfer

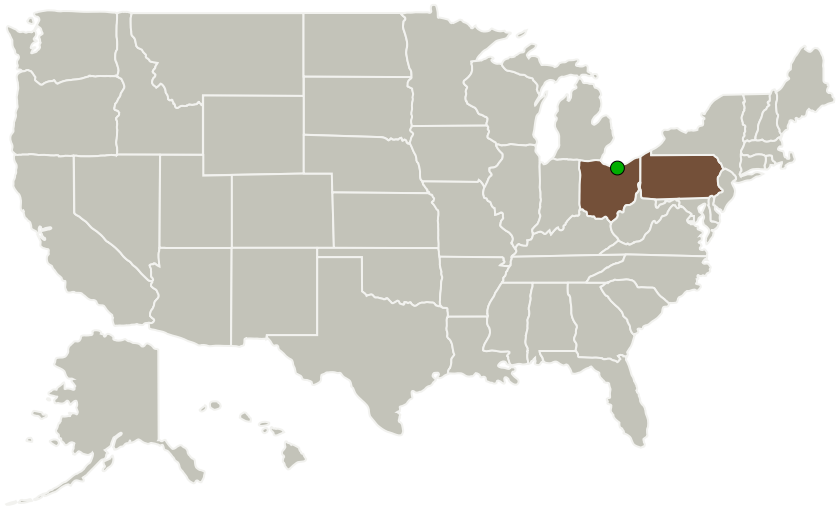
Wide Temperature DC Link Capacitors for Aerospace Power Electronics, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

This project will develop advanced DC link capacitors using flexible ultrathin glass dielectric materials. The glass capacitor will be able to be operated in a broad temperature range (-150 degree C to 500 degree C), frequency (1 kHz to 1 MHz), and high voltage (>1,000 volts). This SBIR project will be focused on examining the technical performance of the glass dielectrics at very high (>200 deg C) and very low (<-100 deg C) temperature for NASA space missions with harsh and extreme environment. The performance under high radiation will also be evaluated as required by NASA. The effects of these extreme conditions on the glass dielectric and high voltage performance will be systematically examined in terms of dielectric constant, dielectric loss, dielectric breakdown strength, and leakage current.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
PolyK Technologies, LLC	Lead Organization	Industry	State College, Pennsylvania
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Wide Temperature DC Link Capacitors for Aerospace Power Electronics Project Image

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Primary U.S. Work Locations	
Ohio	Pennsylvania

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137604)*

Images

Project Image
Wide Temperature DC Link Capacitors for Aerospace Power Electronics Project Image *(https://techport.nasa.gov/image/137111)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

PolyK Technologies, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

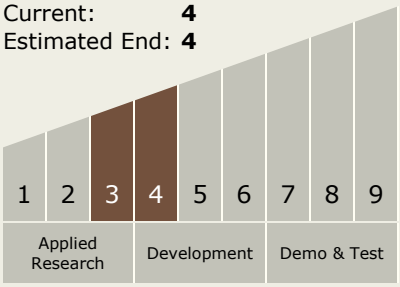
Carlos Torrez

Principal Investigator:

Shihai Zhang

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.3 Power Management and Distribution
    - TX03.3.1 Management and Control

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System